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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,232	04/10/2001	Tomohiko Yamamoto	55801 (70904)	8972

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EXAMINER	
LESPERANCE, JEAN E	
ART UNIT	**PAPER NUMBER**
2629	

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/832,232	YAMAMOTO ET AL.	
	Examiner	Art Unit	
	Jean E Lesperance	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-6,10-13 and 38-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *3,5,10-13 and 38-43* is/are allowed.

6)☒ Claim(s) *2, 4 and 6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed April 25, 2006 and claims 2-6, 10-13 and 38-43 are pending.

Response to Arguments

2. Applicant's arguments filed April 25, 2006 have been fully considered but they are not persuasive. The applicant argued that the prior art does not teach "in a conduction period of the pixel switching element, the voltage applied to each of the pixel electrodes is smaller than the voltage supplied to the signal line". Examiner agrees with the applicant that the prior art does not explicitly discloses "in a conduction period of the pixel switching element, the voltage applied to each of the pixel electrodes is smaller than the voltage supplied to the signal line" however, it is inherent in a liquid crystal display where the voltage of the pixel electrode to be less than the voltage of the signal line because when the signal line which is from the signal driver and it applies its voltage with the gate electrode, pixel electrode, the source electrode of the switching element and a parasitic capacitor. Since the voltage of the signal is shared with all the components of the pixel, its voltage is higher than any of the elements. The applicant argued that the prior art does not teach "wherein a maximum value of an amplitude of the voltage applied to the pixel electrodes is in a range of not less than 80% and not more than 98% of an amplitude of a voltage supplied to the signal lines". Examiner agrees with the applicant that the prior art does not explicitly discloses "wherein a

maximum value of an amplitude of the voltage applied to the pixel electrodes is in a range of not less than 80% and not more than 98% of an amplitude of a voltage supplied to the signal lines" however, it is inherent in a liquid crystal display where the voltage of the pixel electrode to be less than the voltage of the signal line because when the signal line which is from the signal driver and it applies its voltage with the gate electrode, pixel electrode, the source electrode of the switching element and a parasitic capacitor. Since the voltage of the signal is shared with all the components of the pixel, its voltage is higher than any of the elements and not less than 80% and not more than 98% of an amplitude is a design choice. The applicant is advised to amend the claims to includes the allowable subject matter to overcome the inherency in the liquid crystal display panel art. Therefore, the rejection is maintained.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent # 6,577,295 ("Kikkawa") in view US Patent # 5,430,460 ("Takabatake et al.).

Regarding claim 2, Kikkawa teaches a method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate,

pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode being formed on a second substrate for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines (an active matrix LCD device includes a pixel element for defining a pixel area and having a TFT and a pixel electrode disposed in association with a portion of a common electrode. The common electrode encircles the pixel area for shielding the electric field from the black matrix, thereby preventing a stray electric field from entering the pixel area and degrading the image quality (abstract)),

wherein the voltage applied to the pixel electrode is less than a voltage supplied to the signal lines (voltage of the pixel electrode 17 falls below voltage Vd of the signal line 14 due to the charge in the TFT channel flowing into the pixel electrode 17 and to the coupling capacitance between the scanning line 13 and the pixel electrode 17 (column 3, lines 55-59)) where it is inherent for the voltage of the pixel electrode to be less than the voltage of the signal line because when the signal line which is from the signal driver and it applies its voltage with the gate electrode, pixel electrode, the source electrode of the switching element and a parasitic capacitor. Since the voltage of the signal is shared with all the components of the pixel, its voltage is higher than any of the elements. Accordingly, the prior art teaches all the claimed limitations with the exception of providing wherein a proportion of a maximum value of the voltage

applied to the pixel electrodes with respect to the voltage supplied to the signal lines becomes different depending on a polarity of the voltage applied to the pixel electrodes.

However, Takabatake et al. teach a method for driving a liquid crystal display unit is arranged to apply positive-polarity signals to drains of thin film transistors of active matrix liquid crystal elements during an interval of a 1/n field and to apply negative-polarity signals to the drains during an interval of a next 1/n field (abstract) where depending on the polarity Vgk becomes different as seen in Fig.1B.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize the method as taught by Takabatake et al. in the active matrix disclosed by Kikkawa because this would provide a highly reliable active matrix liquid crystal display which is arranged to solve the above mentioned problems concerning flicker and signal voltages.

Regarding claim 4, Kikkawa teaches a method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode being formed on a second substrate for applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines (an active matrix LCD device includes a pixel element for defining a pixel area and having a TFT and a pixel electrode disposed in

association with a portion of a common electrode. The common electrode encircles the pixel area for shielding the electric field from the black matrix, thereby preventing a stray electric field from entering the pixel area and degrading the image quality (abstract)),

wherein the voltage applied to the pixel electrode is less than a voltage supplied to the signal lines (voltage of the pixel electrode 17 falls below voltage Vd of the signal line 14 due to the charge in the TFT channel flowing into the pixel electrode 17 and to the coupling capacitance between the scanning line 13 and the pixel electrode 17 (column 3, lines 55-59)) where it is inherent for the voltage of the pixel electrode to be less than the voltage of the signal line because when the signal line which is from the signal driver and it applies its voltage with the gate electrode, pixel electrode, the source electrode of the switching element and a parasitic capacitor. Since the voltage of the signal is shared with all the components of the pixel, its voltage is higher than any of the elements. Accordingly, the prior art teaches all the claimed limitations with the exception of providing wherein an allocated time for a single scanning line is different for each polarity of the voltage applied to the pixel electrodes.

However, Takabatake et al. teach the negative polarity signals (VD) are applied to the pixels (CLC21, CLC21) connected to even scan lines (VGK+1). The signals are applied during a first 1/n field. During the next 1/n field the process is repeated. Now negative polarity signals are applied to the pixels (CLC11, CLC12) connected to the group of odd scan lines (VGK, VKG+2). Positive polarity signals are applied to the

pixels connected to the even scan lines (column 5, lines 12-21)) where the even scan line represent the single scanning line.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the even scanning line as taught by Takabatake et al. in the active matrix LCD disclosed by Kikkawa because this would provide a highly reliable active matrix liquid crystal display which is arranged to solve the above mentioned problems concerning flicker and signal voltages.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 6 is rejected under 35 U.S.C. 102(e) as being unpatentable over US Patent # 6,577,295 ("Kikkawa").

Regarding claim 6, Kikkawa teaches a method for driving an image display device which includes a plurality of pixel electrodes which are formed on a substrate, pixel switching elements which are individually connected to the pixel electrodes, a plurality of signal lines for applying a data signal according to a display image to the pixel electrodes, and a common electrode being formed on a second substrate for

applying a common potential to pixels, said method controlling a voltage applied to the pixel electrodes in a conduction period of the pixel switching elements according to a pulse width supplied to the signal lines (an active matrix LCD device includes a pixel element for defining a pixel area and having a TFT and a pixel electrode disposed in association with a portion of a common electrode. The common electrode encircles the pixel area for shielding the electric field from the black matrix, thereby preventing a stray electric field from entering the pixel area and degrading the image quality (abstract)),

wherein the voltage applied to the pixel electrode is less than a voltage supplied to the signal lines (voltage of the pixel electrode 17 falls below voltage Vd of the signal line 14 due to the charge in the TFT channel flowing into the pixel electrode 17 and to the coupling capacitance between the scanning line 13 and the pixel electrode 17 (column 3, lines 55-59)),

wherein a maximum value of an amplitude of the voltage applied to the pixel electrodes is in a range of not less then 80 percent and not more than 98 percent of an amplitude of a voltage supplied to the signal lines (voltage of the pixel electrode 17 falls below voltage Vd of the signal line 14 due to the charge in the TFT channel flowing into the pixel electrode 17 and to the coupling capacitance between the scanning line 13 and the pixel electrode 17 (column 3, lines 55-59)) where the amplitude of the pixel electrode can fall between 80 to 98 percent since it is falling below Vd of the signal line. , it is inherent in a liquid crystal display where the voltage of the pixel electrode to be less than the voltage of the signal line because when the signal line which is from the

signal driver and it applies its voltage with the gate electrode, pixel electrode, the source electrode of the switching element and a parasitic capacitor. Since the voltage of the signal is shared with all the components of the pixel, its voltage is higher than any of the elements and not less than 80% and not more than 98% of an amplitude is a design choice.

Allowable Subject Matter

5. Claims 3, 5, 10-13 and 38-43 are allowed over prior art.

6. The following is an examiner's statement of reasons for allowance: the claimed invention is directed to a method of driving an image display.

Independent claim 5 identifies a uniquely distinct feature "wherein the pulse width of a supplied voltage to the signal lines in the conduction period of the pixel switching elements when a positive polarity voltage is applied to the pixel electrodes is different from the pulse width of a supplied voltage to the signal lines in the conduction period of the pixel switching elements when a negative polarity voltage is applied to the pixel electrode when the same tone is being displayed".

Independent claim 5 identifies a uniquely distinct feature "wherein, with respect to an image display device having the common electrode for applying a common potential to the pixels and having a plurality of scanning lines for driving the pixel switching elements, liquid crystal is displaced according to a potential difference between the common electrode and the pixel electrodes so as to carry out display, and an amplitude

of a voltage supplied to the signal lines is equal to an amplitude of a voltage supplied to the common electrode".

Independent claims 10-13 identify a uniquely distinct feature "wherein a potential difference between the potential of the signal line and the potential of the common electrode is maximum at an end of one horizontal period.

Independent claims 38-43 identify a uniquely distinct feature "the signal line driving section supplies a signal, which is created by shifting a phase of a voltage waveform whose polarity is inverted per one horizontal period so that the potential of the signal lines is switched between high level and low level after an elapsed time period which varies depending on the tone when the potential of the scanning lines is ON, with respect to a phase of a voltage waveform of the scanning lines, to the signal lines".

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean Lesperance whose telephone number is (571) 272-7692. The examiner can normally be reached on from Monday to Friday between 10:OOAM and 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on (571) 272-7691.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(571) 273-8300 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Jean Lesperance

Art unit 2674

Date 6/13/2006

RICHARD HJERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600